

NEW MEXICAN THYSANOPTERA

BY DUDLEY MOULTON

This paper includes the descriptions of eight new species of Thrips collected by Professor G. F. Ferris while on a trip through Mexico, for the most part on the west coast, during 1925 and 1926.

***Elaphrothrips albospinosus* Moulton, n. sp.**

Female, holotype: Color blackish brown, including all femora, middle and hind tibiae; fore tibiae yellowish brown in outer third, darker at margins; fore tarsi yellowish brown, middle and hind tarsi brown. Antennal segments I and VI to VIII blackish brown, II dark brown at base shading to yellow at tip, III yellow clouded with brown in distal fifth, IV yellow in basal two-thirds, dark brown in distal third, V brown in basal third, blackish brown in distal two-thirds; all prominent head and body spines clear yellow.

Total body length 2.8 mm.; head length .51 mm., width .21 mm.; head summit, length .057 mm.; width .114 mm.; prothorax, length .225 mm., width .39 mm.; pterothorax, width .40 mm.; abdomen, width .57 mm.; tube, length .44 mm., width at base .105 mm. Antennae: length (width) I, 45 (45); II, 70 (42); III, 150 (36); IV, 120 (36); V, 105 (33); VI, 90 (30); VII, 75 (27); VIII, 60 (18); total length 750 microns. Length of spines: anteoculars 90 microns, postoculars 180 microns, on anterior angles of prothorax 30 microns, mid-laterals 70 microns, on posterior angles 120 microns, on ninth abdominal segment 375 microns, at tip of tube 300 microns.

Length of head including summit 2.5 longer than width across eyes, broadly constricted behind eyes, head summit twice as wide as long. Cheeks slightly swollen and widest at about one-fifth the head's length from posterior margin. Anteocular spines short, about one-half as long as prominent postoculars, both pairs sharply pointed. Cheek spines small, transparent and inconspicuous. Eyes large. Ocelli present but very small. Mouth cone short with rounded tip. Antenna 1.5 times longer than head, segments III to V elongate-clavate, VI and VII elongate-ovate and pediculate, VIII spindle-shaped; III with two sense cones, one on outer margin and a second on ventral inner margin, IV with four sense cones.

Prothorax .45 as long as head, spines along anterior margin and on anterior angles vestigial, mid-laterals moderately small, those at posterior angles long and prominent with blunt tips. Pterothorax only very slightly wider than prothorax with sides straight and parallel. Legs long and slender, fore femora thickened, fore tarsi armed with a short broad-seated tooth. Wings wanting.

Abdomen elongate-ovate with segments six to nine reduced gradually. Tube .85 as long as head. Spines on ninth abdominal segment slightly shorter than tube.

Type material: Female holotype taken on common grass, 1925-1926 (Professor G. F. Ferris). Type in author's collection (Moulton, No. 2565).

Type locality: **Jalisco, Nayarit, Mexico.**

This is the smallest of all known species in this genus. It may be separated from *angusticeps* Crawford and *tener* Priesner known from Mexico, as follows: In *angusticeps* the anteocular spines are much longer than the postoculars, while in this species the postoculars are much the longer. In *tener* the basal third of the fifth antennal segment is yellow, body bristles are dark, light colored only on abdomen, and the third antennal segment is 210 microns long, while in *albo-spinosus* the fifth antennal segment is brown in the basal third, all body bristles are clear, and the third antennal segment is 150 microns long.

Hoplothrips mexicanus Moulton, n. sp.

Female, holotype: Color blackish brown including all legs except only fore tarsi, which are brown. Antennal segments I, II and V to VIII uniformly dark brown except tip of II and base of V, which are lighter; III clear yellow with a shading of brown in outer third; IV yellowish brown in basal half, dark brown in distal half, prominent body spines dark brown. Wings clouded, each with a dark median band extending two-thirds its length.

Total body length (abdomen distended) 2.66 mm.; head length .28 mm., width across cheeks .216 mm.; prothorax length .20 mm., width, including coxæ, .45 mm.; pterothorax width .50 mm.; abdomen width .50 mm.; tube length .25 mm., width at base .096 mm., at tip .050 mm. Antennæ: length (width) I, 24 (36); II, 60 (38); III, 84 (34); IV, 84 (39); V, 81 (36); VI, 75 (33); VII, 60 (30); VIII, 36; total length 495 microns. Length of spines: postoculars 111 microns, on anterior margin of prothorax 72 microns, on anterior angles 36 microns, mid-laterals 90 microns, on posterior angles, outer 138 microns, inner 144 microns, on ninth abdominal segment 300 microns, at tip of tube 210 microns.

Head 1.3 longer than wide; cheeks slightly arched, constricted at the base but not necklike. Postocular spines long, placed 45 microns back from posterior margin of eyes, with blunt tips. Cheek spines short and inconspicuous. Eyes large, ovate, occupying more than one-third the length of the head. Ocelli fully developed, posterior pair contiguous with median inner margins of eyes. Mouth cone short, extending three-fifths over prosternum. Labrum pointed and slightly overhanging, labium broadly rounded. Antenna 1.75 longer than head, intermediate segments elongate-clavate, IV to VII pedicu-

late, VIII broadly joined to VII, III with one sense cone, IV with three.

Prothorax .7 as long as head and including coxæ more than twice as wide as median length of pronotum. All normal spines developed, those on anterior margin approximately twice as long as pair at anterior angles, pair at posterior angles very long, mid-laterals also well developed but shorter than those on posterior angles. Pterothorax broad and strong. Fore femora thickened, each fore tarsus armed with a broad-seated tooth. Wings fully developed, with parallel sides, fore pair with sixteen double-fringe hairs along posterior margin.

Abdominal segments II and VI of uniform width. Tube .9 as long as head. Abdominal spines strong, those on ninth abdominal segment somewhat longer than length of tube.

Male allotype: Similar in shape and color to female, but with fore femora more noticeably enlarged and outer pair of spines on ninth abdominal segment shortened.

Type material: Female holotype, male allotype, and nineteen female paratypes taken on *Pithecolobium* sp., July 26, 1927 (Professor G. F. Ferris). Types in author's collection (Moulton, Nos. 2562 and 2571).

Type locality: **Mazatlan, Mexico.**

This species may be compared with *Hoplothrips fuscus* Morgan, but is easily separated by the color of the intermediate antennal segments. In this species segment III is yellow and IV yellowish brown only in basal half; in some paratypes the fourth segment is almost uniformly dark brown. In *fuscus* segment III is "yellow; IV and V yellow, very slightly infusate at the sides near the tip; six yellow in basal half, infusate in apical half."

Holopothrips ferrisi Moulton, n. sp.

Female, holotype: Color uniformly brown including all legs and antennal segments I and II, III to VI clear yellow except for a faint cloud of brown in distal third of segment V and a slightly darker shade in distal half of VI, VII and VIII light brown. Wings clear, prominent body spines light yellowish brown.

Total body length: 2.5 mm.; head length .316 mm., width .233 mm.; prothorax length .20 mm., width, including coxæ, .33 mm.; pterothorax width .416 mm.; abdomen width .43 mm.; tube length .20 mm., width at base .075 mm. Antennæ: length (width) I, 30 (36); II, 60 (30); III, 105 (30); IV, 78 (30); V, 87 (30); VI, 72 (24); VII, 60 (21); VIII, 36; total length 580 microns. Length of spines: post-oculars 45 microns, on anterior angles of prothorax 36 microns, mid-laterals 45 microns, on posterior angles, outer 81 microns, inner

54 microns, on ninth abdominal segment 180 microns, at tip of tube 180 microns.

Head 1.36 longer than wide, cheeks almost straight, back of head with numerous transverse, indistinct, wavy lines. Postocular spines moderately short and stout, with dilated tips, cheek spines inconspicuous. Eyes large, reniform, and contiguous with anterior ocellus in front, protruding inward behind so that their interval is about one-third the greatest width of a single eye. Ocelli closely placed and anterior in position. Mouth cone extending past posterior margin of prosternum and broadened at tip. Labrum distinctly pointed. Antenna 1.8 longer than head. Segment VII with wide pedicel, VIII broadly united to VII; sense cones moderately short, segment III with three and IV with 3 + 1.

Prothorax .66 as long as head and .3 wider than long. Well developed spines on anterior angles and middle of sides which are about half as long as those at posterior angles, all with dilated tips; pair along anterior margin vestigial and with pointed tips. Transverse, semireticulated lines of pronotum indistinct, more clearly defined on mesonotum and clearly defined on metanotum but longitudinal in position. All legs slender, fore tarsi unarmed. Wings fully developed with parallel sides, thirteen to fifteen double-fringe hairs on fore pair.

Abdomen slender, tube .7 as long as head and slightly less than three times as long as width at base.

Type material: Female holotype, thirteen female paratypes taken on *Coccoloba* sp. in 1926 (Professor G. F. Ferris), and named in honor of Professor Ferris. Types in author's collection (Moulton, No. 2555).

Type locality: **San Blas, Nayarit, Mexico.**

This species may be separated from *H. tenuis* Hood by the following characters: It has well-developed, blunt-tipped spines on anterior angles of prothorax, but those on the anterior margin are vestigial and pointed, the head is 1.36 longer than wide, and antennal segments III to V are uniformly clear yellow. *H. tenuis* Hood has a minute bristle on each anterior angle, but those along anterior margin are well developed; the head is 1.6 longer than wide, and the bases of antennal segments III to V are darker.

Holopothrips elongatus Moulton, n. sp.

Female, holotype: Color uniformly dark brown including all legs and antennal segments I and II (III to VIII broken off). Wings shaded light brownish yellow especially along borders.

Total body length 3.3 mm.; (abdomen distended); head length .42 mm., width across eyes .22 mm.; prothorax length .18 mm., width, including coxæ, .39 mm.; pterothorax width .48 mm.; tube length .27 mm., width at base .08 mm. Length of spines: postoculars 60 microns, on anterior margin of prothorax 30 microns, at posterior angles, outer and inner subequal 93 microns, on ninth abdominal segment 255 microns.

Head twice as long as width across eyes; cheeks straight and parallel. Postocular spines well developed but short, with blunt tips; cheek spines inconspicuous. Eyes large, slightly protruding, reniform as in other members of the genus. Ocelli large, anterior in position, almost completely surrounded and obscured. Mouth cone elongate, extending to posterior margin of prosternum, truncate at end, labium sharply pointed. Maxillary palpi with first segment very short, second very long, together 95 microns.

Prothorax .44 as long as head and approximately twice as wide as long. Spines along anterior margin well developed but short, those on anterior angles and the mid-laterals vestigial; pair on posterior angles long and stout. Pterothorax clearly wider than prothorax; sculpturing on pronotum indistinct, on mesonotum clearly defined and largely transverse but continued backward to a point in the center; sculpturing of the metanotum clearly defined, the broken wavy lines longitudinal in position, becoming semireticulate toward posterior margin. Legs slender, fore tarsi unarmed. Wings fully developed, with parallel sides but noticeably narrowing toward their tips. Fore pair with nineteen to twenty double-fringe hairs.

Abdomen slender, tube .64 as long as head and about 3.5 longer than width at base. Spines on ninth abdominal segment approximately as long as tube.

Type material: Female holotype, one female paratype taken on *Lonchocarpus sericeus*, 1925-1926 (Professor G. F. Ferris). Types in author's collection (Moulton, No. 2568).

Type locality: **Mexico** (exact location not given).

This species may be compared with *H. tenuis* Hood, but is easily distinguished by the longer head, the absence of developed spines along anterior margin of prothorax and at the middle of the sides, and by the larger number of double-fringe hairs, 19 to 20 as compared with 10 to 12.

Diceratothrips brevitubus Moulton, n. sp.

Female, holotype: Color blackish brown with abdominal segments II to VI lighter, legs blackish brown, also antennæ except segment II which is lighter toward the tip, and III which is yellow clouded brown at tip. Wings brownish at base with a median dark line extending to near middle, borders of fore wings light brownish. Prominent body spines and wing cilia dark brown.

Total body length 3.64 mm.; head length .45 mm., width at eyes .266 mm., at cheeks .250 mm.; prothorax length .20 mm., width, including coxæ, .32 mm.; pterothorax width .50 mm., abdomen width .48 mm.; tube length .20 mm., width at base .10 mm. Antennæ: length (width) I, 54 (42); II, 75 (39); III, 156 (39); IV, 126 (42); V, 90 (36); VI, 75 (33); VII, 60 (30); VIII, 45; total length 633 microns. Length of spines: anteoculars 105 microns, postocellars 45 microns, postoculars 210 microns, on anterior margin of prothorax 60 microns, on anterior angles 60 microns, mid-laterals 60 microns, on posterior angles, outer 126 microns, inner 135 microns, on ninth abdominal segment 360 microns, at tip of tube 270 microns.

Head 1.8 longer than width at eyes, vertex swollen and overhanging basal segments of antennæ; cheeks straight and parallel. Post-ocular bristles long, extending across eyes and far in front of head, with pointed tips. A pair of well-developed spines on forehead which project to the middle of the second antennal segment a shorter spine placed close behind each posterior ocellus; cheek spines inconspicuous. Eyes large, anterior ocellus at tip of swollen vertex, posterior ocelli also large and contiguous with inner anterior margin of eyes. Mouth cone reaching three-fourths across prosternum, blunt at tip, labrum pointed. Antennæ 1.6 longer than head; sense cones normally developed.

Prothorax less than .5 head's length, all normal spines well developed, those on posterior angles more than twice as long as others, all with blunt tips. Pterothorax with slightly arched sides. Legs slender, noticeably spinose, fore tarsi unarmed. Wings fully developed, fore pair with twenty-two double-fringe hairs.

Abdomen elongate, narrower than pterothorax, reduced gradually beyond second segment. Segments II to VI reticulate in anterior two-thirds and cross-striate in posterior third. Tube short, less than .5 as long as head. Bristles on ninth segment and the tip much longer than tube.

Type material: Holotype, three female paratypes, four larvæ taken January 10, 1926, from an unknown host plant (Professor G. F. Ferris). Types in author's collection (Moulton, No. 2556).

Type locality: Along Cohahuayana River, State of **Colima, Mexico.**

This species may be compared with *D. brevicornis* Bagnall, from the Hawaiian Islands, but separated by its longer head, 1.8 as compared with 1.6 longer than wide, the short blunt sense cones as compared with the long, pointed cones and the much shorter tube, .45 as compared with 1.12 as long as head.

***Liothrips colimæ* Moulton, n. sp.**

Male, holotype: Color dark chestnut brown with much red hypodermal pigment in thorax and abdomen. Legs concolorous with body except tips of fore tibiae and fore tarsi, which are lighter. Antennal segments I and II dark brown, III to VI yellow, VII shading from yellow to light brown, VIII light brown. Wings shaded at base, otherwise clear. Prominent body spines brown.

Total body length 1.55 mm.; head length .20 mm., width .14 mm.; prothorax length .10 mm., width, including coxæ, .233 mm.; pterothorax width .266 mm.; tube length .108 mm., width at base .06 mm. Antennæ: length (width) I, 15 (27); II, 36 (27); III, 54 (27); IV, 48 (27); V, 48 (27); VI, 45 (22); VII, 39 (21); VIII, 30; total length 330 microns. Length of spines: postoculars 45 microns, on anterior angles of prothorax 30 microns, mid-laterals 18 microns, posterior angles, outer 60 microns, inner 39 microns, on ninth abdominal segment 135 microns, at tip of tube 120 microns.

Head 1.43 longer than wide, vertex slightly swollen; cheeks straight and parallel. Postocular spines short, with blunt tips. Eyes large, rounded. Ocelli anterior in position, fore ocellus at tip of vertex and directed forward. Mouth cone narrowed in the middle, pointed, reaching two-thirds over prosternum. Labrum sharply pointed. Antenna 1.65 longer than head.

Prothorax .5 as long as head, spines at anterior angles well developed but short, pair at posterior angles somewhat longer, those along anterior margin and on middle of sides vestigial. Pronotum with transverse wavy lines intermingled with smooth areas giving a blotched effect. Pterothorax with evenly formed sides. Legs normal, fore tarsi unarmed. Wings fully developed with parallel sides, fore pair with eight double-fringe hairs.

Abdomen reduced gradually beyond second segment. Tube .6 as long as head, spines on ninth segment and at tip somewhat longer than tube.

Female, allotype: Total body length 2.0 mm. Similar in shape and color to male, but with first abdominal segments somewhat broader.

Type material: Male holotype, female allotype, one male and one female paratype taken January, 1926, from leaves of an undetermined shrub (Professor G. F. Ferris). Types in author's collection (Moulton, No. 2557). Named after type locality.

Type locality: Along Cohahuayana River, State of **Colima, Mexico.**

This species is very closely related to *L. dampfi* Karny, and may be only a variety of that species. It is separated chiefly by the color of antennal segments III to VI, which are clear yellow, while in *dampfi* IV is slightly clouded brown at the tip,

and V is light brown at the tip. The mouth cone, like *dampf*, is weakly truncate and in this respect it also approaches the genus *Gynaikothrips*, the labrum is sharply pointed.

***Liothrips querci* Moulton, n. sp.**

Female, holotype: Color uniformly dark chestnut brown including all legs and first antennal segment, II dark brown at base, shading to clear yellow at tip, III to VI clear yellow with only a faint shading of brown at tip of VI, VII and VIII brown. Wings clear. Prominent body spines dark brown.

Total body length 2.83 mm.; head length .366 mm., width at eyes .216 mm., cheeks .20 mm.; prothorax length .20 mm., width, including coxæ, .366 mm.; pterothorax width .50 mm.; abdomen width .466 mm.; tube length .283 mm., width at base .083 mm. Antennæ: length (width) I, 30; II, 63; III, 138; IV, 120; V, 99; VI, 84; VII, 69; VIII, 42; total length 615 microns. Length of spines: postoculars 105 microns, on anterior margin and angles of prothorax 72 microns, mid-laterals 120 microns on posterior angles, outer 150 microns, inner 132 microns, on ninth abdominal segment 195 microns, at tip of tube 240 microns.

Head 1.75 longer than wide, broadest across at eyes, slightly narrower behind eyes; cheeks straight and narrowed again at the base. Postocular spines long and prominent, placed 75 microns back from posterior margins of eyes, with blunt tips. Eyes large, somewhat concave on inner margins where they have a tendency to surround the outer sides of the posterior ocelli which are contiguous with them. Anterior ocellus on swollen vertex. Mouth cone long and sharply pointed, reaching beyond posterior margin of prosternum. Antenna 1.66 longer than head, segment three increasing in width gradually from its broad base to the tip, not clavate in shape as in most species in this genus.

Prothorax .54 as long as head, with all normal spines strongly developed, with blunt tips. Pterothorax much wider than prothorax. Sculpturing on metanotum distinctly longitudinal from anterior margin. Legs long and slender, fore tarsi unarmed. Wings fully developed with parallel sides, fore pair with sixteen double-fringe hairs.

Abdomen elongate. Tube long and slender, .75 as long as head and about 1.3 wider at base than at tip. Spines on ninth abdominal segment long but much shorter than length of tube.

Male allotype: Similar in shape and color to female, but somewhat smaller.

Total body length 2.66 mm.; head, length .35 mm., width at eyes .21 mm.; at cheeks .183 mm.; prothorax, length .166 mm., width .30 mm.; mesothorax width .416 mm.; abdomen width .366 mm.; tube length .30 mm.; width at base .07 mm. An-

tennæ: length (width) I, 30; II, 54; III, 150; IV, 126; V, 105; VI, 78; VII, 66; VIII, 42; total length 645 microns. Length of spines: postoculars 90 microns, on anterior margin of prothorax 69 microns, on anterior angles 60 microns, mid-laterals 90 microns, on posterior angles, outer 126, inner 120 microns, on ninth abdominal segment 240 microns, at tip of tube 210 microns.

Type material: Female holotype, male allotype, two male and two female paratypes and one larva taken on oak foliage, January 18, 1926 (Professor G. F. Ferris). Types in author's collection (Moulton, Nos. 2558 and 2567).

Type locality: **Coalcoman, Michoacan, Mexico**, altitude 7500 feet.

This species seems to be most closely related to *L. major* Buffa, but I am unable to make a comparison because of the brief description of the latter species. *L. micurus* Bagnall, Egypt, has a much more prominent and swollen vertex, a shorter and broader tube and greatly reduced thoracic bristles.

Rhynchothrips brevitubus Moulton, n. sp.

Female, holotype (macropterous): Color dark chestnut brown to blackish brown including all legs and antennal segments I, II and V to VIII, II yellow in first and third quarters and brown in second and fourth quarters, IV dark brown with a light band in third quarter. Thorax and abdomen with red hypodermal pigment. Wings brownish in basal third, clear in distal two-thirds, all prominent body spines dark brown.

Total body length 1.82 mm.; head length .23 mm., width .20 mm.; prothorax length .183 mm., width, including coxæ, .383 mm.; pterothorax width .466 mm.; abdomen width .516 mm.; tube length .15 mm., width at base .083 mm. Antennæ: length (width) I, 36 (36); II, 51 (36); III, 69 (33); IV, 69 (39); V, 66 (34); VI, 66 (33); VII, 48 (27); VIII, 30; total length 450 microns. Length of spines: postoculars 66 microns, on anterior margin of prothorax 42 microns, on anterior angles 42 microns; mid-laterals 51 microns on posterior angles, outer 105 microns, inner 84 microns, on ninth abdominal segment 81 microns, at tip of tube 111 microns, basal wing spines 48, 51, and 51 microns, respectively.

Head .2 longer than wide; cheeks slightly arched. Postocular spines as long as eyes, with blunt tips. Postocellar spines somewhat longer than diameter of ocelli. Eyes large, subovate. Anterior ocellus on slightly swollen vertex and directed forward; posterior ocelli large and contiguous with anterior inner margins of eyes. Mouth cone extremely long and pointed, extending halfway across

mesosternum. Antenna moderately stout, twice as long as head, segment III clavate with one sense cone on outer surface, IV to VII oval-pediculate, VIII broadly joined to VII and sharply conical.

Prothorax .3 shorter than head and twice as wide as median length of pronotum, the latter with short median thickening. All spines present with blunt tips, pair on each posterior angle longest, the outer somewhat longer than the inner. Pterothorax broad. Legs fairly stout, fore femora thickened, each fore tarsus armed with a broad, blunt tooth.

Abdomen large. Tube very short, .65 as long as head and approximately twice as long as basal width.

Male allotype (brachypterous): Similar in shape and color to female, except that the fore femora are more noticeably enlarged and the tooth on each fore tarsus is more prominent, angular, and bears two spines on its outer surface.

Total body length 1.6 mm.; head length .216 mm., width .17 mm.; prothorax length .183 mm., width, including coxæ, .40 mm.; pterothorax width .39 mm.; abdomen width .43 mm.; tube length .15 mm., width at base .08 mm. Antennæ: length (width) I, —; II, —; III, 75 (30); IV, 78 (33); V, 72 (30); VI, 69 (27); VII, 54 (27); VIII, 36; total length 450 microns. Length of spines: postoculars 81 microns, on anterior margin of prothorax 45 microns, on anterior angles 48 microns, mid-laterals 60 microns, on posterior angles, outer 105 microns, inner 96 microns, on ninth abdominal segment, spines 120 microns, spurs 45 microns, at tip of tube 120 microns.

Type material: Female holotype, two macropterous and nine brachypterous female paratypes, male allotype and two brachypterous male paratypes, found deforming leaves of an unknown host plant, July 26, 1927 (Professor G. F. Ferris). Types in author's collection (Moulton, No. 2561).

Type locality: **Mazatlan, Mexico.**

This species is most closely related to *R. dentifer* Hood, but may be separated by its somewhat larger size, longer third and fourth antennal segments, 69, as compared with 54-57 m., respectively, in the latter species, and by the striking bandlike coloration of the third antennal segment. *H. dentifer* has the third antennal segment brownish yellow, shaded with brown at the sides and over distal two-thirds. The fore wings of *brevitubus* are brownish in basal third, while in *dentifer* they are brownish in the middle.